DOCUMENT RESUME

ED 192 390 CS 503 024

AUTHOR Pool, Ithiel de Sola
TITLE Communications and Integrated Planning.
PUB DATE Sep 80
NOTE 9p.: Paper presented at the Annual Meeting of the International Institute of Communications (Ottawa, Canada, September 7-11, 1980).

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Bureaucracy; *Communications; *Communications Satellites; *Cooperative Planning; Information Systems; *International Organizations; *Organizational Communication; Specialists; *Standards; Technological Advancement
IDENTIFIERS International Telecommunication Union; United Nations Economic and Social Council

ABSTRACT

Communications specialists should interpret the slogan "integrated communications planning" as a concern for communicating efforts to promote education, health, racial equality, and world peace rather than as a call to expand bureaucratic power and control. The advantages of multiple initiatives and of allowing specialists to perform their specialties could be endangered by an overly strong and comprehensive integrated framework. Examples of situations where such a framework could be detrimental include (1) the setting and freezing of technical standards for the telecommunications industry, (2) satellite orbit and frequency allotments in a tightly unified satellite communications system, and (3) attempting to coordinate the efforts of organizations as diverse as the International Telecommunication Union (ITU) and the United Nations Economic and Social Council (UNESCO). The history of freedom consists of efforts to confine authorities to their strictly restricted domains. Communications planners should have their authority narrowly confined. (AEA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED192390

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

COMMUNICATIONS AND INTEGRATED PLANNING

Talk by Ithiel de Sola Pool

International Institute of Communications

Ottowa

September 10, 1980

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Ithiel de Sola Pool

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS503024

When our Canadian hosts invited me to give the talk here today on integrated communications planning, my reaction was to tell them that I was the wrong person to give that talk because I did not believe in integrated planning. It is almost implicit when one uses golden words like "integrated" that one is talking about a good thing. So if one sets up a session with a title like "integrated planning" one generally assumes that that is a desirable goal and that the subject of discussion will be why the world needs it and how to achieve it.

Well our hosts had fair warning and the opportunity to accept my declination. But either out of gentlemanly sportsmanship or out of a desire to have a controversial session our hosts kindly persisted and said they really wanted me to talk and say whatever I pleased. So here I am.

Now why on earth would anyone be troubled by the slogan of integrated communications planning? The simple answer is that there are real advantages to pluralism. There are advantages to multiple initiatives. There are advantages to allowing specialists to do their specialized things. There are advantages to the clash of competing efforts. There are, of course, limits and a need for a shared framework. Our purpose today is to define what the needed framework consists of. It is not necessarily true that the present state of the world errs on the side of an inadequately comprehensive and integrated framework. Perhaps in some instances there is too strong a framework already.

To clarify my argument I should like to talk about three examples:

standards
satellite orbit & frequency allotments
the relation of the ITU to UNESCO and the rest of the UN

Standards:

Standards are essential to effective communication. A radio transmitter and its receivers have to be built to common modulations. Movie films have to be standard widths to fit in cameras. Indeed, the alphabet is a standard and so is language. I am here assuming we all agree on the interpretation of the letters S, T, A, N, D, A, R, D and of the word "standards," or else I would not be communicating with you.

The ITU has two important standard setting organizations, the CCIR dealing with radio and the CCITT dealing with telecommunications. Now no one would suggest that these organizations -- which do standardize telegraphic codes -- should go into competition with the Academic Francais or Webster's dictionary in standardizing the languages we speak and write.

That would be a reductio ad absurdum, far from the intention of any advocate of integrated planning. But just where do we draw the line?

Even if we limit ourselves to standards within the present domains of CCITT and CCIR, there are real drawbacks to adopting standards along with their essential uses. Every standard is a brake on innovation. An inventor may think of a better way of doing something, but if his invention fails to conform to existing standards, it will have a hard time getting adopted.

Fortunately, therefore, it is usually quite hard to get a standard adopted. Each country or each manufacturer has an interest in having their special wrinkle placed on the technology. So usually before the CCITT or CCIR can reach agreement on a standard, that standard has already become a de facto standard, frequently because a preeminent firm such as IBM or Kodak, or dominant agencies such as PTT, have settled on it and made most customers assume that particular practice.

There are only a very few instances of the formal adoption of a standard in advance of its widespread implementation. X-25 is perhaps the star example. It was clear to the industry that if incompatible computer packet networks were built side by side or in different countries, much of the value of such networks would be lost since they would be expensive to interconnect. So a standard, namely X-25, was adopted, following closely, it is true, the practice of the main existent networks, and strongly protested by a few advocates of new approaches. This was done before packet nets had come to be widely used. Most users and administrations are happy to follow that common standard allowing interconnection.

A strong case can be made for the wisdom of X-25, but networks, a major purpose of which is to provide universal interconnection, are precisely the application for which such a case can best be made. Let us compare it with the troublesome case of videotapes and videodiscs. We users have all suffered from, and been annoyed by, the incompabilities of equipment of different makes. But, we would not in the end be better off if some planners had been able in advance of late technical developments and of market experience to impose a single method of recording. That would have killed development.

There is no easy answer to the question of when it is wise to freeze a standard. There are great advantages to having standards; but there are also advantages to going through the painful process of trial, competition and error. There is certainly no way in which planners, however, wise they may be, can effectively replace the present process.

That process is one in which technical specialists reach agreement only when national and industrial interests that they

represent reach a compromise that all see as in their interests. There has to be consensus because they have no sanction behind their decision beyond the shared realization that standards are necessary and should be supported.

That is far from a problem-free system, but it is unlikely that across the board the job would be done better by more general authorities less familiar with the technical details, and by abandoning the imperfect process of market experimentation. The present unintegrated and consensual standards setting process has much to be said for it in most situations.

Orbit Planning:

My second example is orbit planning. In 1977 the direct satellite broadcasting WARC adopted a plan for 12-14 GHz use. Within the next year it began to appear that the plan rested on erroneous technical assumptions. With the passage of time that seems more and more probable. The 1977 image of the satellite future saw the geostationary orbit being populated by modestly sized satellites, mostly each belonging to some nation, and spaced a degree or two or more apart. Each satellite would serve its country by an uplink and downlink at different frequencies in a beam roughly corresponding to the perimeter of the country. Given that image it made some sense to worry about orbit crowding and the fairness of the allocation of spots and frequencies.

In the three years since 1977, there has been much discussion, first, of giant space platforms and, more recently, of satellite clusters. A giant space platform would be an antenna farm in the sky. A platform large enough to carry all the needed antennas would be placed in one location over a continent. There are advantages to this. Switching can take place on board the space platform, so a message or program sent up from one location can be switched to another antenna beamed down to another location. Implicit in this is the use of spectrum saving techniques in which very narrow beams play an important part. Large beams overlap extensively, requiring each to have a separate frequency. But look at the pattern in Figure 1. Four frequencies repeated over and over in little beams will cover any area without interference. That is but one of several frequency reuse techniques that can be implemented on the large sophisticated

equipment carried on a space platform.

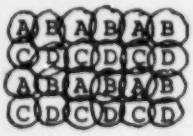

Figure 1
Reuse of Four Beams

However, space platforms have one important disadvantage. While their enormous cost is shared, still the large investment is in an inflexible design. A decade or two later one may have to put up a new, more modern platform, but in the meantime a lot of things are immutable. Reaching agreement on periodic big investments will be hard.

That difficulty is extensively overcome by space clusters which, instead of being bolted together, have separate satellites positioned in a cluster. Each is a few hundred meters or a kilometer or so from the next. Instead of antennas being connected by wires for switching, they are interconnected by very low-powered, very narrowly focused microwaves. That way interference problems are minimized in the cluster. New satellites can be put up in the cluster when needed or taken down, one at a time at any time. In other respects the cluster operates like a platform.

Such clusters (or platforms too, for that matter) require international cooperation and planning, much more cooperation in fact than either the present system or the 1977 plan, but the scheme of cooperation is very different from that of the 1977 plan.

Clusters or platforms minimize the problems of orbit and frequency assignment, which is what the 1977 plan is all about. At the extreme, one could conceive of all the antennas on the geostationary orbit being at three locations, serving one third of the globe each.

A cluster or platform system solves the problems of orbit and frequency scarcity far better than anything else yet proposed, but to operate it would require something like Intelsat.

What is proposed is an elaborate engineering project requiring standardized switching, and agreement also on all sorts of other protocols. One could maintain the formality of national ownership of various pieces of the system such as antennas or satellites, just as at present, cable operators maintain the

fiction of national ownership half way across the ocean. But just like a cable, it really has to operate as one system.

I don't want to suggest that this is the final satellite system that technologists will devise. New developments will undoubtedly make what I have just said obsolete, just as the 1977 scheme is now obsolete.

We can draw some lessons about planning from all of this, nonetheless. Planning is undoubtedly necessary, but its results are almost always wrong. It tends to freeze obsolete systems into use. Given these weaknesses of planning, good planning generally defers decisions as long as possible. It keeps options open as long as possible. The decisions that do have to be made should be as narrow as possible.

Of course, the words "as possible" in the above conclusions are weasel words that camouflage inevitability of differences of opinion on specifics. One person will feel that the time has come when a planning decision is inescapable. Another will disagree. There is no way to eliminate such differences. We are not trying to solve particular problems here. We are discussing principles. And I am arguing that the goal of integrated planning is wrong. The right principle is planning only when necessary.

ITU and UNESCO:

Let me turn to my third and last example: ITU and UNESCO. Integrated planning would imply that these two very different organizations should coordinate more closely. That would be a disaster.

One of the things that has made the ITU the success that it has been, is its refusal to become involved in issues of content. The ITU is an engineering organization. One would have to be incredibly naive not to recognize that hidden in much of the technical debate are the political interests and ideologies of the member countries. But to abandon the convention that political concerns must be hidden inside of technical arguments would vastly reduce the effectiveness of the organization. Its podium would become the scene of propaganda debates. These explicit confrontations would reduce rather than increase the chance of agreement.

May I indulge in one more reductio ad absurdum. Do we want the ITU to try (like a McBride Commission) to tell the world's print press what sorts of things it should publish? Of course not!

But that is not such a reductio ad absurdum. The technology of the print press and of electronic publishing is rapidly merging. News may be delivered by teletext, videotex, computer terminals

or facsimile as well as from printing presses. So can ads. ITU will in any case have to deal with frequencies and with technical standards that these "newspapers" of the future require. If ITU allows itself to consider content along with technical requirements, what I called a reductio ad absurdum could end up being reality.

So let us keep our planners each working in their own specialized and narrow domains. Let us confine their bureaucratic imperialism rather than encouraging it by telling them to recognize the full implications of what they are doing and to plan in an integrated way.

Indeed it is true that everything affects everything. It is particularly true for communications. Communications occurs in every aspect of life. Nothing is done without communicating. The slogan "integrated communications planning" is a plea for communications specialists to claim a concern for education and health, race relations and world peace.

In arguing against the wisdom of encouraging communications planners' claim to more power, I am not asserting that this unity of reality is untrue. On the contrary I am asserting it is true. Communications really is everything. For scholars, for thinkers, for analysts, for organizations like the IIC, the implication is that they should draw their nets widely. They need to look at communications in an integrated way. For those with power, however, and that includes official planners, the implications are the reverse.

The whole history of freedom consists of efforts to confine authorities to their strictly restricted domains. Bills of rights and constitutions have denied to power-holders their plea that power over one domain may be used to control some other. Religious authorities often wish to extend their moral concerns to the regulation of business and politics, while political authorities consider that their responsibility for the national interest gives them the right to require religious conformity. Walls against that kind of integrated view have been built in all free societies; but these are walls only on the exercise of authority. No one denies that religion, politics, and business have implications for each other.

Reality is truly one whole. Those of us who describe reality, but forgo the right to plan what others do, need not avoid looking at the truth of integration as it is. The IIC, to use our organization as an example, should be concerned about communications and health, communications and education, communications and racial equality, communications and development, communications and world peace. From such integrative perspectives we may judge and criticize what communications planners are doing. But let us not engage in the fantasy that if we can get some all-wise philosopher kings to

plan communications in all its complexity, they will rule us better. Communications planners are in the first place not philosopher kings, and, furthermore, in a good society -- contrary to what Socrates thought -- even philosopher kings should have their authority narrowly confined.